

APPENDIX H INTEGRATED PEST MANAGEMENT

The Superior National Forest manages non-native invasive plants with an integrated pest management (IPM) approach. IPM involves more than simply identifying a pest and using a control strategy. This coordinated approach involves considering the pest and its life cycle, the surrounding habitat and environment, and available control methods to determine the most effective means of meeting pest management goals. This appendix describes the components of the Superior National Forest's IPM program for non-native invasive plants.

Information/Education

Educating and informing the public, agency employees, and partners about NNIP is critical to limiting the impacts of NNIP. The following list describes ongoing education efforts the Superior National Forest engages in:

- Public NNIP presentations: local garden clubs, schools, forest visitors, partners
- County Fair booths/displays
- NNIP posters for BWCAW entry points
- NNIP booklets for BWCAW visitors
- NNIP information in BWCAW trip planning guide and video
- BWCAW visitor contacts by NNIP crews
- Internal NNIP education incorporated into employee trainings

Inventory and Early Detection

Having a fairly thorough and up to date NNIP inventory is important and can be used in many ways: determining the scope of invasives problems, planning and prioritizing treatments, tracking new invaders, etc. By systematically inventorying on a regular basis, new NNIP species can be detected early while effective management options exist. For the past 6 years BWCAW crews have inventoried NNIP in the wilderness; the results of this inventory are shown in the maps in Appendix A and were used to develop the proposed action.

Prevention

Prevention is a critical and cost effective action that can keep NNIP from becoming a problem – this is widely recognized, and a number individuals and organizations commented about wanting to know more about prevention measures with respect to the BWCAW NNIP Management Project. Prevention measures are integrated into nearly all Superior National Forest programs and are an integral part of NNIP management in the BWCAW. The following are examples of prevention measures being used on the Superior National Forest.

- Heavy equipment cleaning provisions for:
 - Timber sale contracts
 - Road maintenance contract
 - Site preparation contract
 - Heavy equipment contract for fire suppression
 - Mineral exploration for federally owned minerals
- Gear cleaning for out of state fire fighters
- Use of noxious weed seed free seed, straw, and forage

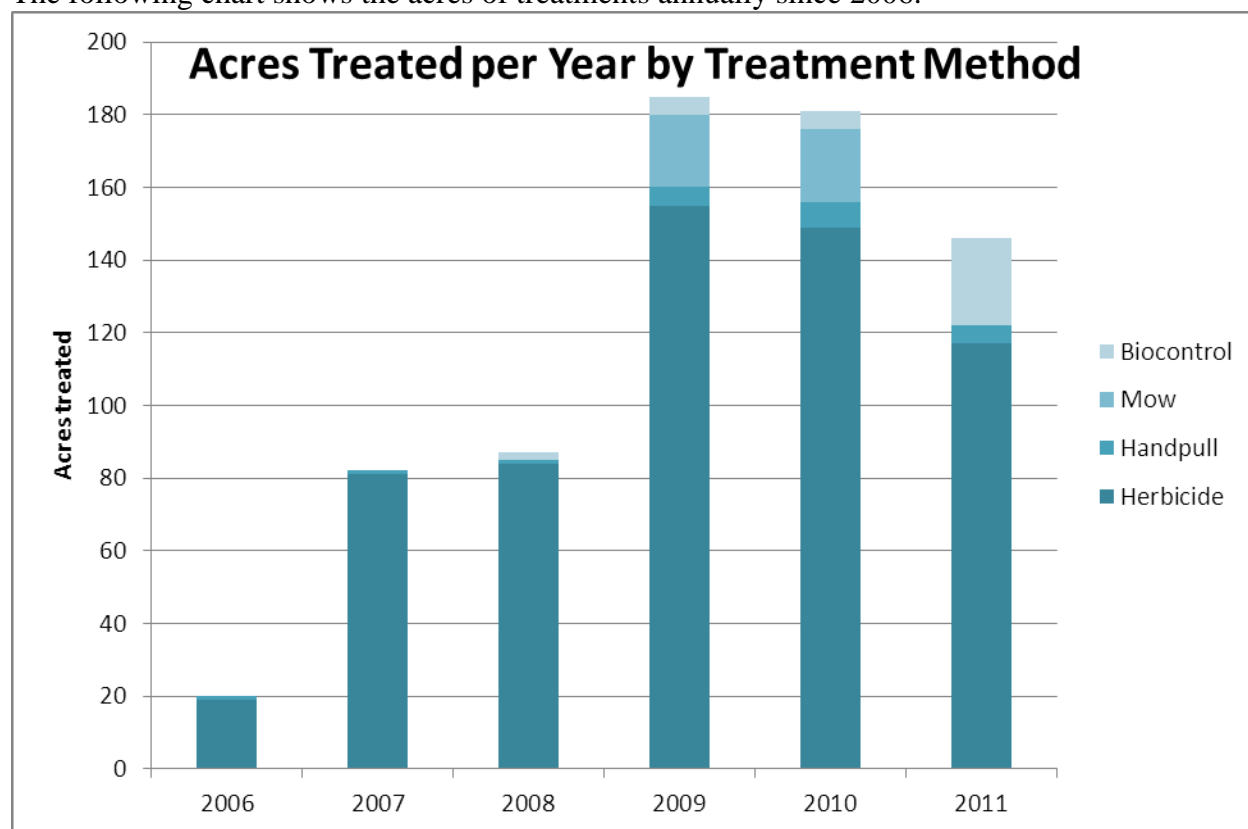
- Boot brush stations at some trailheads that access BWCAW
- Gear cleaning between sites for BWCAW NNIP crews
- NNIP avoidance mitigations in for vegetation management NEPA projects
- Treating NNIP on roads used for timber harvest prior to harvest
- Treatments at BWCAW entry points to reduce seed source for spread into BWCAW

Treatments

Since 2006 the Superior National Forest has been reducing the abundance of NNIP through treatments, including herbicide, manual treatments, and release of biological control insects. Treatments are prioritized and strategic. Some general NNIP treatment principles are

- New invaders are critical to eradicate
- Gravel pits are critical priority treatment areas
- It is a critical priority to keep weed-free or nearly weed-free blocks of land from becoming infested
- Prioritize treatments in more susceptible habitats (shallow soiled, droughty, or wetland sites) over less susceptible habitats (mesic forested habitats)
- Generally, focus on eradicating small populations (<1 ac) and containing larger (>1 ac) populations.

The following chart shows the acres of treatments annually since 2006.



Restoration

The Superior National Forest has a policy of using locally native plant species (or short lived non-natives like annual rye used as a cover crop) for revegetation of sites where a decision has been made

to seed the site. Establishing native vegetative cover on disturbed sites can provide competition that helps limit the abundance of NNIP in the future. Natural regeneration of sites is often used as well.

Monitoring

The monitoring component of IPM includes monitoring the abundance of NNIP on the Superior National Forest as well as the effectiveness of our NNIP treatments. Over the last few years, there has been a slow increase in the number of NNIP acres on the Forest, in spite of an increasing number of NNIP infestations that have been eradicated (USDA Forest Service 2011). This is most likely due in part to ongoing inventories to detect new infestations combined with some of the larger wildfires that have happened on the Forest in recent years.

Every year the Superior National Forest monitors at least 50% of the NNIP treatment acres. This monitoring shows that over the last several years, treatment effectiveness has remained relatively high Table 1. Generally, where crews have been conducting treatments on the Superior National Forest, the treatments have been effective at reducing the abundance of NNIP.

Table 1. Acres of annual non-native invasive plant treatment and treatment effectiveness, 2005-2011							
Year	2005	2006	2007	2008	2009	2010	2011
Acres treated	8	20	82	86	185	181	146
Average Treatment Effectiveness	Not measured	90%	65%	53%	84%	83%	87%

Partnerships and Coordination

Another important component of the IPM program is partnerships and coordination. NNIP do not respect property boundaries, and there is always more NNIP work to be done than budgets allow, so building partnerships with other land managers, property owners, and organizations is important to improve overall effectiveness of NNIP management. Some recent accomplishments include:

- Working with Friends of the Boundary Waters, who received an REI grant, to develop an NNIP booklet for BWCAW visitors so they can recognize and report NNIP.
- Training a weed crew with the 1854 Authority to inventory and treat NNIP on Superior National Forest lands
- Participating on the Cook County Invasives Team (<http://www.co.cook.mn.us/index.php/invasives-species-team>), a cooperative weed management area in Cook County. The CCIT has some impressive education and prevention accomplishments in Cook County.
- Helping to establish the St. Louis County Cooperative Weed Management Area.
- Working with the City of Ely and Ely Naturalists to control buckthorn in Ely